

**To:** Kady, Thomas[Kady.Thomas@epa.gov]  
**Cc:** Saari, Christopher A - DNR  
(Christopher.Saari@Wisconsin.gov)[Christopher.Saari@Wisconsin.gov]  
**From:** Dave Larsen  
**Sent:** Fri 8/11/2017 1:17:37 PM  
**Subject:** RE: Tower Standard -- Pilot/FS Work

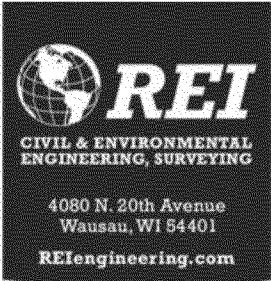

Tom, can you please make a few recommendations on pilot test parameters. Specifically looking for placement/construction of AS/SVE wells for pilot and blower/compressor and ancillary component requirements you have?




We may be on site with drill rig week after next and may be able to install pilot points if needed. Feel free to call if that is easier.

Thank you,

David N. Larsen P.G

Hydrogeologist / Professional Geologist

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**From:** Kady, Thomas [mailto:Kady.Thomas@epa.gov]  
**Sent:** Friday, August 04, 2017 11:58 AM  
**To:** Dave Larsen <dlarsen@reiengineering.com>; Saari, Christopher A - DNR (Christopher.Saari@Wisconsin.gov) <Christopher.Saari@Wisconsin.gov>; Egan, Robert <egan.robert@epa.gov>  
**Subject:** Tower Standard -- Pilot/FS Work

Hello everyone –

As we all agreed on today's call, while a lot of environmental data exist (geology, hydrogeology, and contaminant distribution in various media), we have very little engineering data required to:

1. determine the feasibility of preferred remedy options, namely, excavation and/or AS/SVE;
2. develop appropriate methodologies (e.g., dewatering, water treatment and/or disposal requirements in the case of excavation);
3. design and operate an effective treatment system (e.g., optimal well spacing, blower/compressor specifications, air treatment requirements, permit requirements, power needs, etc.), or
4. develop reasonably accurate cost estimates and timelines to perform the work;
5. provide the stakeholders and decision makers the information necessary to evaluate the cost and effectiveness of the remedy options and select the best path forward.

For the AS/SVE system option, we agreed a 1 – 2 day field test is needed to determine:

1. Radius of influence of SVE wells
2. Ability of sparge air to rise through the interbedded lenses in the smear zone
3. Mass recovery rates – instantaneous and sustained
4. Effectiveness of sparge air recovery
5. Impact on water table elevation from both the vacuum wells and sparge points
6. Blower and compressor requirements

The field test should be performed in a stepwise manner (i.e., testing parameters at various vacuum and flow rates on the SVE wells and at various pressure and flow rates on the sparge points). Such a step test will provide the data needed to optimize the system design and performance.

For the excavation option, the main things to figure out are the sheeting/shoring plan and dewatering methodology. Once that is known, a field test can be designed to determine the likely water volumes and concentrations that will be encountered during the excavation. This data will determine water storage capacity needed, treatment trains (if treated and discharged on site), disposal costs if on-site treatment is not allowed, materials handling issues, and overall effectiveness of excavation methodology.

Let me know your thoughts on the above as well as anything I may have overlooked. Then we can develop a specific plan for the field tests.

Best regards,

Tom

Tom Kady

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